Serial No.: 10/632,289 PU010211CIP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Inventors	:	**Samuel Pearlman et al.**
Serial No.	:	**10/632,289**
Filed	:	**August 1, 2003**
Title	:	**METHOD OF MANUFACTURING A MATRIX FOR A CATHODE-RAY TUBE**
Examiner	:	**John A. McPherson**
Art Unit	:	**1756**

Mail Stop Appeal Brief - Patents
COMMISSIONER FOR PATENTS
P. O. Box 1450
Alexandria, VA 22313-1450

S I R:

I hereby certify that this correspondence is being transmitted via facsimile to Mail Stop Appeal Brief - Patents, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on July 25, 2006 at facsimile number (571) 273-8300.

Patricia A. Verlangieri

APPELLANTS' BRIEF UNDER C. F. R. § 1.192

On February 28, 2006, Appellants' filed a timely Notice of Appeal (that was received in the United States Patent and Trademark Office on February 28, 2006) from the action of the Examiner finally rejecting pending claims 1-8 and 13-20. The Appellants' herein file this Brief in accordance with 35 U. S. C. § 1.192.

1. IDENTIFICATION OF THE REAL PARTY IN INTEREST

The real party in interest for the above-identified application is Thomson Licensing S. A., which is the assignee of record for this application.

2. IDENTIFICATION OF RELATED APPEALS OR INTERFERENCES

To the best of Appellants' knowledge, there are no appeals or interferences that will be directly affected by, or will have a bearing on the decision of this appeal.

3. STATUS OF THE CLAIMS

Claims 1-8 and 13-20 are rejected, and the rejection of claims 1-8 and 13-20 is appealed.

The above-identified application was filed on August 1, 2003 as a Continuation in part (CIP) of parent application having Serial No. 09/962,520. Claims 1-20 were pending.

A first Office Action was mailed December 14, 2004 (Paper No. **20041208**), in which claims 1-8 and 13-20 were rejected. Claims 9-12 were objected to as dependent upon a rejected base claim.

In Appellants' response to the first Office Action, dated June 14, 2005, no claims were amended.

The Examiner in a second Office Action mailed August 31, 2005 (Paper No. **20050826**), finally rejected claims 1-8 and 13-20.

The status of the claims is as follows:

Original claims 1-8 and 13-20.

4. STATUS OF THE AMENDMENTS

No amendments were made after final rejection. All amendments were entered.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are symmetrically located about the inner source position, and wherein the inner source position is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively, with two source locations of the three source locations for each of the second and third exposure steps being asymmetrically located with respect to the inner source positions. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Independent claim 13 is directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at

page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, $-\Delta X$ and $+\Delta X$, and an inner source position, 0, wherein the two outer source positions, $-\Delta X$ and $+\Delta X$, are symmetrically located about the inner source position, 0, and wherein the inner source position is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively. The source locations of the second exposure step for forming the second guardband being displaced from a primary source position, -X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, +2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, -X, wherein the third source position is located at least between $-\Delta X$ and $+\Delta X$ from the primary source position -X. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34. The source locations of the third exposure step for forming the third guardband being displaced from a primary source position, +X, by ΔX toward the central source position, 0, a position displaced

from a secondary source position, -2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, +X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position +X. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Independent claim 18 is directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, -ΔX and +ΔX, and a first color source position, G, wherein the two outer source positions, -ΔX and +ΔX, are symmetrically located about the first color source position, G, and wherein the first color source position G is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively. The source locations of the second exposure step for forming the second guardband being displaced from a second color source position, B, at a distance -X from the central color

source position, 0, and two light sources located at positions -X + ΔX and 2X - ΔX from the central source position 0. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34. The source locations of the third exposure step for forming the third guardband being displaced from a third color source position, R, at a distance X from the central color source position, 0, and two light sources located at positions X - ΔX and -2X + ΔX from the central source position 0. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Independent claim 19 is directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode with a transmission of about 30 % to about 45 % having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are symmetrically located about the inner source position, and wherein the inner source position is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third

photoresist layer, respectively, with two source locations of the three source locations for each of the second and third exposure steps being asymmetrically located with respect to the inner source positions. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Independent claim 20 is directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are asymmetrically located about the inner source position, and wherein the inner source position is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively, with two source locations of the three source locations for each of the second and third exposure steps being symmetrically located with respect to the inner source positions. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

6. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

1. The Examiner has rejected claims 1-8 and 13-20 as being unpatentable under 35 U. S. C. § 103(a) over LaPeruta et al. (U. S. Patent 6,013,400) in view of Yamazaki et al. (EP Application 0 146 226 A2).

7. ARGUMENT

1. Rejection of claims 1-8 and 13-20 under 35 U. S. C. § 103(a) over LaPeruta et al. (U. S. Patent 6,013,400) in view of Yamazaki et al. (EP Application 0 146 226 A2).

Claims 1-8

LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube. See LaPeruta et al. at column 1, lines 5-10. In LaPeruta et al., each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. See LaPeruta et al. at FIGS. 7, 13 and 19 as well as column 5, line 57 to column 7, line 38.

Appellants' claims 1-8 are directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode,

wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are symmetrically located about the inner source position, and wherein the inner source position is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively, with two source locations of the three source locations for each of the second and third exposure steps being asymmetrically located with respect to the inner source positions. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Laperuta et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer using three source locations including two outer source positions located symmetrically about an inner central source position to form first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are asymmetrically located with respect to the inner source positions. Rather, LaPeruta et al. discloses a completely different method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for

each of first, second and third exposure steps. Therefore, Appellants' claims 1-8 are patentable over LaPeruta et al.

Yamazaki et al. describes a method of manufacturing a light absorbing matrix for a cathode ray tube. See Yamazaki et al. at page 1, lines 3-6. In Yamazaki et al., three equidistant source locations are used for exposing the stripes of light absorbing material. See Yamazaki et al. at FIG. 4 and page 6, lines 1-11.

Yamazaki et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer using three source locations including two outer source positions located symmetrically about an inner central source position to form first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are asymmetrically located with respect to the inner source positions. Rather, Yamazaki et al. teaches away from Appellants' claims 1-8 by disclosing that three equidistant source locations be used for exposing the stripes of light absorbing material. Therefore, Appellants' claims 1-8 are patentable over Yamazaki et al.

Furthermore, since LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps and Yamazaki et al. discloses using three equidistant source locations for exposing the stripes of light absorbing material, the combination of these references does not describe Appellants' method recited in claims 1-8. In particular, claims 1-8 recite a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a

first photoresist layer using three source locations including two outer source positions located symmetrically about an inner central source position to form first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are asymmetrically located with respect to the inner source positions. Thus, claims 1-8 are patentable over LaPeruta et al. in view of Yamazaki et al. All claims argued in this section will stand or fall together.

Claims 13-17

LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube. See LaPeruta et al. at column 1, lines 5-10. In LaPeruta et al., each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. See LaPeruta et al. at FIGS. 7, 13 and 19 as well as column 5, line 57 to column 7, line 38.

Appellants' claims 13-17 are directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, $-\Delta X$ and $+\Delta X$, and an inner source position, 0, wherein the two

outer source positions, -ΔX and +ΔX, are symmetrically located about the inner source position, 0, and wherein the inner source position is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively. The source locations of the second exposure step for forming the second guardband being displaced from a primary source position, -X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, +2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, -X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position -X. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34. The source locations of the third exposure step for forming the third guardband being displaced from a primary source position, +X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, -2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, +X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position +X. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Laperuta et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is

generated from three source locations including two outer source positions, -ΔX and +ΔX, and an inner source position, 0, wherein the two outer source positions, -ΔX and +ΔX, symmetrically located about the inner source position, 0, to form first guardbands of light-absorbing material, second guardbands of light-absorbing material formed using a first source location being displaced from a primary source position, -X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, +2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, -X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position -X, and third guardbands of light-absorbing material formed using a first source location being displaced from a primary source position, +X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, -2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, +X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position +X. Rather, LaPeruta et al. discloses a completely different method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. Therefore, Appellants' claims 13-17 are patentable over LaPeruta et al.

Yamazaki et al. describes a method of manufacturing a light absorbing matrix for a cathode ray tube. See Yamazaki et al. at page 1, lines 3-6. In Yamazaki et al., three equidistant source locations are used for exposing the stripes of light absorbing material. See Yamazaki et al. at FIG. 4 and page 6, lines 1-11.

Yamazaki et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light

through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, -ΔX and +ΔX, and an inner source position, 0, wherein the two outer source positions, -ΔX and +ΔX, symmetrically located about the inner source position, 0, to form first guardbands of light-absorbing material, second guardbands of light-absorbing material formed using a first source location being displaced from a primary source position, -X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, +2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, -X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position -X, and third guardbands of light-absorbing material formed using a first source location being displaced from a primary source position, +X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, -2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, +X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position +X. Rather, Yamazaki et al. teaches away from Appellants' claims 13-17 by disclosing that three equidistant source locations be used for exposing the stripes of light absorbing material. Therefore, Appellants' claims 13-17 are patentable over Yamazaki et al.

Furthermore, since LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps and Yamazaki et al. discloses using three equidistant source locations for exposing the stripes of light absorbing material, the combination of these references does not describe Appellants' method recited in claims 13-17. In particular, claims 13-17 recite a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer formed on the interior surface of the

faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, -ΔX and +ΔX, and an inner source position, 0, wherein the two outer source positions, -ΔX and +ΔX, symmetrically located about the inner source position, 0, to form first guardbands of light-absorbing material, second guardbands of light-absorbing material formed using a first source location being displaced from a primary source position, -X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, +2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, -X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position -X, and third guardbands of light-absorbing material formed using a first source location being displaced from a primary source position, +X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, -2X, by ΔX toward the central source position 0 and the third source position at or near the primary source position, +X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position +X. Thus, claims 13-17 are patentable over LaPeruta et al. in view of Yamazaki et al. All claims argued in this section will stand or fall together.

Claim 18

LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube. See LaPeruta et al. at column 1, lines 5-10. In LaPeruta et al., each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. See LaPeruta et al. at FIGS. 7, 13 and 19 as well as column 5, line 57 to column 7, line 38.

Appellants' claim 18 is directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at

page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, $-\Delta X$ and $+\Delta X$, and a first color source position, G, wherein the two outer source positions, $-\Delta X$ and $+\Delta X$, are symmetrically located about the first color source position, G, and wherein the first color source position G is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively. The source locations of the second exposure step for forming the second guardband being displaced from a second color source position, B, at a distance -X from the central color source position, 0, and two light sources located at positions $-X + \Delta X$ and $2X - \Delta X$ from the central source position 0. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34. The source locations of the third exposure step for forming the third guardband being displaced from a third color source position, R, at a distance X from the central color source position, 0, and two light sources located at positions $X - \Delta X$ and $-2X + \Delta X$ from the central

source position 0. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Laperuta et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, $-\Delta X$ and $+\Delta X$, and a first color source position, G, wherein the two outer source positions, $-\Delta X$ and $+\Delta X$, symmetrically located about the and a first color source position, G, to form first guardbands of light-absorbing material, second guardbands of light-absorbing material formed using source positions being displaced from a second color source position, B, at a distance -X from the central color source position, 0, and two light sources located at positions $-X + \Delta X$ and $2X - \Delta X$ from the central source position 0 and the third source position at or near the primary source position, -X, wherein the third source position is located at least between $-\Delta X$ and $+\Delta X$ from the primary source position -X, and third guardbands of light-absorbing material formed using source positions being displaced from a third color source position, R, at a distance X from the central color source position, 0, and two light sources located at positions $X - \Delta X$ and $-2X + \Delta X$ from the central source position 0. Rather, LaPeruta et al. discloses a completely different method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. Therefore, Appellants' claim 18 is patentable over LaPeruta et al.

Yamazaki et al. describes a method of manufacturing a light absorbing matrix for a cathode ray tube. See Yamazaki et al. at page 1, lines 3-6. In Yamazaki et al., three equidistant source locations are used for exposing the stripes of light absorbing material. See Yamazaki et al. at FIG. 4 and page 6, lines 1-11.

Yamazaki et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, $-\Delta X$ and $+\Delta X$, and a first color source position, G, wherein the two outer source positions, $-\Delta X$ and $+\Delta X$, symmetrically located about the and a first color source position, G, to form first guardbands of light-absorbing material, second guardbands of light-absorbing material formed using source positions being displaced from a second color source position, B, at a distance -X from the central color source position, 0, and two light sources located at positions $-X + \Delta X$ and $2X - \Delta X$ from the central source position 0 and the third source position at or near the primary source position, -X, wherein the third source position is located at least between $-\Delta X$ and $+\Delta X$ from the primary source position -X, and third guardbands of light-absorbing material formed using source positions being displaced from a third color source position, R, at a distance X from the central color source position, 0, and two light sources located at positions $X - \Delta X$ and $-2X + \Delta X$ from the central source position 0. Rather, Yamazaki et al. teaches away from Appellants' claim 18 by disclosing that three equidistant source locations be used for exposing the stripes of light absorbing material. Therefore, Appellants' claim 18 is patentable over Yamazaki et al.

Furthermore, since LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps and Yamazaki et al. discloses using three equidistant source locations for exposing the stripes of light absorbing material, the combination of these references does not describe Appellants' method recited in claim 18. In particular, claim 18 recites a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings

on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions, -ΔX and +ΔX, and a first color source position, G, wherein the two outer source positions, -ΔX and +ΔX, symmetrically located about the and a first color source position, G, to form first guardbands of light-absorbing material, second guardbands of light-absorbing material formed using source positions being displaced from a second color source position, B, at a distance -X from the central color source position, 0, and two light sources located at positions -X + ΔX and 2X - ΔX from the central source position 0 and the third source position at or near the primary source position, -X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position -X, and third guardbands of light-absorbing material formed using source positions being displaced from a third color source position, R, at a distance X from the central color source position, 0, and two light sources located at positions X - ΔX and -2X + ΔX from the central source position 0. Thus, claim 18 is patentable over LaPeruta et al. in view of Yamazaki et al. Claim 18 as argued in this section stands or falls alone.

Claim 19

LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube. See LaPeruta et al. at column 1, lines 5-10. In LaPeruta et al., each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. See LaPeruta et al. at FIGS. 7, 13 and 19 as well as column 5, line 57 to column 7, line 38.

Appellants' claim 19 is directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at

page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode with a transmission of about 30 % to about 45 % having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are symmetrically located about the inner source position, and wherein the inner source position is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively, with two source locations of the three source locations for each of the second and third exposure steps being asymmetrically located with respect to the inner source positions. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Laperuta et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube having a color selection electrode with a transmission of about 30 % to about 45 % by exposing a first photoresist layer using three source locations including two outer source positions located symmetrically about an inner central source position to form

first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are asymmetrically located with respect to the inner source positions. Rather, LaPeruta et al. discloses a completely different method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. Therefore, Appellants' claim 19 is patentable over LaPeruta et al.

Yamazaki et al. describes a method of manufacturing a light absorbing matrix for a cathode ray tube. See Yamazaki et al. at page 1, lines 3-6. In Yamazaki et al., three equidistant source locations are used for exposing the stripes of light absorbing material. See Yamazaki et al. at FIG. 4 and page 6, lines 1-11.

Yamazaki et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube having a color selection electrode with a transmission of about 30 % to about 45 % by exposing a first photoresist layer using three source locations including two outer source positions located symmetrically about an inner central source position to form first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are asymmetrically located with respect to the inner source positions. Rather, Yamazaki et al. teaches away from Appellants' claim 19 by disclosing that three equidistant source locations be used for exposing the stripes of light absorbing material. Therefore, Appellants' claim 19 is patentable over Yamazaki et al.

Furthermore, since LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps and Yamazaki et al. discloses using three equidistant source locations for exposing the stripes of light absorbing material, the combination of these references does not describe Appellants' method recited in claim 19. In particular, claim 19 recites a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube having a color selection electrode with a transmission of about 30 % to about 45 % by exposing a first photoresist layer using three source locations including two outer source positions located symmetrically about an inner central source position to form first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are asymmetrically located with respect to the inner source positions. Thus, claim 19 is patentable over LaPeruta et al. in view of Yamazaki et al. Claim 19 as argued in this section will stand or fall alone.

Claim 20

LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube. See LaPeruta et al. at column 1, lines 5-10. In LaPeruta et al., each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. See LaPeruta et al. at FIGS. 7, 13 and 19 as well as column 5, line 57 to column 7, line 38.

Appellants' claim 20 is directed to a method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT). See Appellants' specification at

page 2, lines 27-30). The light absorbing matrix is formed on an inner surface of a faceplate panel of the cathode-ray tube and includes a plurality of substantially equally sized openings. See Appellants' specification at page 6, lines 3-10. A color selection electrode is spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots. See Appellants' specification at page 5, lines 5-8. The light absorbing matrix is formed by exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are asymmetrically located about the inner source position, and wherein the inner source position is a central source position. See Appellants' specification at FIG. 6 and page 6, line 28 to page 7, line 2. Unexposed portions of the first photoresist layer are removed, the interior surface of the faceplate panel is overcoated with a light-absorbing matrix material and retained portions of the first photoresist layer are removed to form first guardbands of light-absorbing material on the inner surface of the faceplate panel. See Appellants' specification at FIGS. 5c-5e and page 7, line 19 to page 8, line 21. Second guardbands of light-absorbing material and third guardbands of light-absorbing material are formed using a second photoresist layer and a third photoresist layer, respectively, with two source locations of the three source locations for each of the second and third exposure steps being symmetrically located with respect to the inner source positions. See Appellants' specification at FIG. 8 and 10 as well as page 8, line 22 to page 10, line 34.

Laperuta et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer using three source locations including two outer source positions located asymmetrically about an inner central source position to form first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using

a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are symmetrically located with respect to the inner source positions. Rather, LaPeruta et al. discloses a completely different method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first, second and third exposure steps. Therefore, Appellants' claim 20 is patentable over LaPeruta et al.

Yamazaki et al. describes a method of manufacturing a light absorbing matrix for a cathode ray tube. See Yamazaki et al. at page 1, lines 3-6. In Yamazaki et al., three equidistant source locations are used for exposing the stripes of light absorbing material. See Yamazaki et al. at FIG. 4 and page 6, lines 1-11.

Yamazaki et al. does not describe or suggest a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer using three source locations including two outer source positions located asymmetrically about an inner central source position to form first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are symmetrically located with respect to the inner source positions. Rather, Yamazaki et al. teaches away from Appellants' claim 20 by disclosing that three equidistant source locations be used for exposing the stripes of light absorbing material. Therefore, Appellants' claim 20 is patentable over Yamazaki et al.

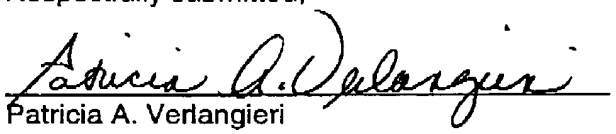
Furthermore, since LaPeruta et al. discloses a method of manufacturing a light-absorbing matrix for a cathode ray tube in which each of first, second and third guardbands are formed using only two source locations for each of first,

second and third exposure steps and Yamazaki et al. discloses using three equidistant source locations for exposing the stripes of light absorbing material, the combination of these references does not describe Appellants' method recited in claim 20. In particular, claim 20 recite a method of manufacturing a light-absorbing matrix including a plurality of substantially equally sized openings on an inner surface of the faceplate panel of a cathode-ray tube by exposing a first photoresist layer using three source locations including two outer source positions located asymmetrically about an inner central source position to form first guardbands of light-absorbing material and second guardbands of light-absorbing material and third guardbands of light-absorbing material formed using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are symmetrically located with respect to the inner source positions. Thus, claim 20 is patentable over LaPeruta et al. in view of Yamazaki et al. Claim 20 as argued in this section will stand or fall alone.

8. CONCLUSION

In view of the above, Appellants' respectfully request that the Examiners' rejection of claims 1-8 and 13-20 be reversed. Favorable action is respectfully requested.

Respectfully submitted,



Patricia A. Verlangieri
Reg. No. 42,201
(609) 734-6867

Thomson Licensing Inc.
P. O. Box 5312
Princeton, New Jersey 08543-5312

July 26, 2006

Attachments
Appendix A - Claims 1-8 and 13-20
Appendix B - Evidence
Appendix C - Related Proceedings

APPENDIX A - APPEALED CLAIMS

1. A method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT), including a plurality of substantially equally sized openings therein, on an inner surface of a faceplate panel of the cathode-ray tube having a color selection electrode spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots, comprising the steps of:

(a) exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are symmetrically located about the inner source position, and wherein the inner source position is a central source position;

(b) removing unexposed portions of the first photoresist layer;

(c) overcoating the interior surface of the faceplate panel with a light-absorbing matrix material;

(d) removing retained portions of the first photoresist layer to form first guardbands of light-absorbing material on the inner surface of the faceplate panel; and,

(e) repeating steps (a) through (d) twice more to form second guardbands of light-absorbing material and third guardbands of light-absorbing material, using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second and third exposure steps are asymmetrically located with respect to the inner source positions.

2. The method of claim 1, further comprising the step of applying a protective coating on the light-absorbing matrix after formation of the third guardbands on the surface of the faceplate panel.

3. The method of claim 2 wherein the protective coating comprises potassium silicate.

4. The method of claim 1 wherein the light-absorbing matrix material comprises graphite.

5. The method of claim 4 wherein the graphite is coated with an oxidation barrier.

6. The method of claim 5 wherein the oxidation barrier is selected from the group consisting of silicon dioxide (SiO_2) and aluminum oxide (Al_2O_3).

7. The method of claim 1 wherein step (c) further comprises heating the light-absorbing material overcoated on the surface of the faceplate panel to a temperature within a range of about 40 ^{o}C to about 60 ^{o}C.

8. The method of claim 1 wherein the light-absorbing material overcoated on the surface of the faceplate panel has a solids content within a range of about 5 % by weight to about 8 % by weight.

13. A method of manufacturing a light-absorbing matrix for a cathode-ray tube (CRT) including a plurality of substantially equally sized openings therein, on an inner surface of a faceplate panel of the cathode-ray tube having a color selection electrode spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots, comprising the steps of:

a) applying a first photoresist layer on the interior surface of the faceplate panel whose solubility is altered when it is exposed to light;

b) exposing the first photoresist layer to light through the slots in the color selection electrode from at least three source positions including a position at or near a central source position, 0, that is aligned with a color source and two

symmetrically displaced positions, -ΔX and +ΔX, relative to the central source position, 0;

c) removing unexposed portions of the first photoresist layer;

d) overcoating the interior surface of the faceplate panel with a light-absorbing matrix material;

e) removing retained portions of the first photoresist layer to form first guardbands of light-absorbing material on the inner surface of the faceplate panel; and

f) repeating steps (a) through (e) twice more to form a second guardband of light-absorbing material and a third guardband of light-absorbing material using a second photoresist layer and a third photoresist layer, respectively, wherein:

i) three source positions for printing the second guardband include exposures from the following source positions: a source position displaced from a primary source position, -X, by ΔX toward the central source position, 0, a position displaced from a secondary source position, +2X, by ΔX toward the central source position 0 and a third source position at or near the primary source position, -X, wherein the third source position is located at least between -ΔX and +ΔX from the primary source position -X; and

ii) three source positions for printing the third guardband include exposures from the following source positions: a source position displaced from another primary source position, +X, by ΔX toward the central source position, 0, a position displaced from another secondary source position, -2X, by ΔX toward the central source position 0 and another third source position at or near the another primary source position, +X, wherein the another third source position is located at least between -ΔX and +ΔX from the another primary source position +X.

14. The method of claim 13 wherein the second guardband is printed before the first guardband.

APPENDIX B - EVIDENCE

Not applicable.

APPENDIX C - RELATED PROCEEDINGS

Not applicable.

15. The method of claim 13 wherein the third guardband is printed before the first guardband.

16. The method of claim 13 wherein the third source position is located at least within $\Delta X/2$ of the primary source position, -X, for printing the second guardbands.

17. The method of claim 13 wherein the another third source position is located at least within $\Delta X/2$ of the another primary source position, +X, for printing the third guardbands.

18. A method of forming a light-absorbing matrix for a cathode-ray tube (CRT) including exposing to light and selectively hardening photoresist material layers on the inner surface of the faceplate panel of the cathode-ray tube (CRT), comprising the steps of:

a) projecting at least three light sources for a first exposure onto a first photoresist material layer through slots of a mask located between the light sources and the inner surface of the faceplate panel wherein one of the light sources is aligned with a first color source position, G, along a central color source position, 0, and the remaining light sources are positioned from at least two symmetrically displaced positions, $-\Delta X$ and $+\Delta X$, on either side of the central color source position, 0;

b) projecting the light sources for a second exposure onto a second photoresist material layer through slots of the mask wherein at least one of the light sources is aligned with a second color source position, B, at a distance, -X, from the central color source position, 0, and two light sources are located at positions, $-X+\Delta X$ and $2X-\Delta X$, from the central color source position, 0; and,

c) projecting the light sources for a third exposure onto a third photoresist material layer through slots of the mask wherein at least one of the light sources is aligned with a third color source position, R, at a distance, X, from the central

color source position, 0, and two light sources are located at positions, X-ΔX and -2X+ΔX, from the central color source position, 0.

19. A method of manufacturing a light-absorbing matrix, including a plurality of substantially equally sized openings therein, on an inner surface of a faceplate panel of the cathode-ray tube (CRT) having a color selection electrode with a transmission of about 30 % to about 45 %, that is spaced from the inner surface of the faceplate panel wherein the color selection electrode has a plurality of slots, comprising the steps of:

(a) exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are symmetrically located about the inner source position, and wherein the inner source position is at or near a central source position;

(b) removing unexposed portions of the first photoresist layer;

(c) overcoating the interior surface of the faceplate panel with a light-absorbing matrix material;

(d) removing retained portions of the first photoresist layer to form first guardbands of light-absorbing material on the inner surface of the faceplate panel; and,

(e) repeating steps (a) through (d) twice more to form second guardbands of light-absorbing material and third guardbands of light-absorbing material, using a second photoresist layer and a third photoresist layer, respectively, wherein two source locations of the three source locations for each of the second exposure step and the third exposure step are asymmetrically located with respect to the inner source positions.

20. A method of manufacturing a light-absorbing matrix, including a plurality of substantially equally sized openings therein, on an inner surface of a faceplate panel of the cathode-ray tube (CRT) having a color selection electrode spaced from the inner surface of the faceplate panel, the color selection electrode having a plurality of slots, comprising the steps of:

(a) exposing a first photoresist layer formed on the interior surface of the faceplate panel to light through the plurality of slots in the color selection electrode, wherein the light is generated from three source locations including two outer source positions and an inner source position, wherein the two outer source positions are asymmetrically located about the inner source position, and wherein the inner source position is at or near a central source position;

(b) removing unexposed portions of the first photoresist layer;

(c) overcoating the interior surface of the faceplate panel with a light-absorbing matrix material;

(d) removing retained portions of the first photoresist layer to form first guardbands of light-absorbing material on the inner surface of the faceplate panel; and,

(e) repeating steps (a) through (d) twice more to form second guardbands of light-absorbing material and third guardbands of light-absorbing material, using a second photoresist layer and a third photoresist layer, respectively, wherein at least one of the three source locations for each of the second exposure step and the third exposure step are symmetrically located with respect to the inner source position.